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OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
EXAMINER ALEJANDRO, RAYMOND				
ART UNIT		PAPER NUMBER		
1795				
NOTIFICATION DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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### Office Action Summary

**Application No.**

10/535,400

**Applicant(s)**

HENNIGE ET AL.

**Examiner**

Raymond Alejandro

**Art Unit**

1795

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 12/04/08 and 02/12/09.  
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-28, 30 and 31 is/are pending in the application.  
4a) Of the above claim(s) 20-28, 30 and 31 is/are withdrawn from consideration.  
5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.  
6) ☒ Claim(s) 1-19 is/are rejected.  
7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☒ Information Disclosure Statement(s) (PTO/SB/003)  
Paper No(s)/Mail Date See Continuation Sheet  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_  
5) ☐ Notice of Informal Patent Application  
6) ☐ Other: \_\_\_\_\_

Continuation of Attachment(s) 3. Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :05/18/05, 06/20/05, 05/24/06, 06/05/07, 04/15/08.

## DETAILED ACTION

### *Election/Restrictions*

1. Applicant's election with traverse of Group I (claims 1-19) in the reply filed on 02/12/09 and 12/04/09 is acknowledged. The traversal is on the ground(s) that “*Groups I-III are integrally linked as product, process and the use of said product. All of the claims, either directly or indirectly depend on claim 1*” and “*claims 30 and 31 are an intrinsic part of the elected invention and should really be examined together. Unity of invention has to be considered only in relation to the independent claim. A dependent claim is one which contains the features of another claim and is in the same category of claims as other claims*” and “*It does not matter if a dependent claim itself contains a further invention. All of the claims should be group together since they form a single general inventive concept*”. This is not found persuasive because the lack-of-unity of the present application is grounded on 35 USC 121, 372 and PCT Rule 13.1-13.2, as such, it suffices to show that the special technical feature does not provide a contribution over the prior art. As previously indicated, in this case, the specific porous ceramic structure is known in the art as evidenced at least by DE 10115927, 10115928, US 2002/023874 and US 5885657. There is lack of unity “*a posteriori*”. Thus, the criteria for setting forth an appropriate lack-of-unity on the basis of “*a posteriori*” doctrine has been fully satisfied. A document discovered and applied hereinbelow shows that there is a presumption of lack of novelty or inventive step in a main claim, so that there may be no technical relationship left over the prior art among the claimed inventions involving one or more of the same or corresponding special technical features, leaving two or more dependent claims without a single general inventive concept (*See MPEP 1850 Unity of Invention*).

The requirement is still deemed proper and is therefore made FINAL.

***Priority***

2. Receipt is acknowledged of papers submitted under 35 U.S.C. 119(a)-(d), which papers have been placed of record in the file.

***Information Disclosure Statement***

3. The information disclosure statements (IDS) submitted on 05/18/05, 06/20/05, 05/24/06, 06/05/07 and 04/15/08 were considered by the examiner.

***Claim Rejections - 35 USC § 112***

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. Claims 1-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.
6. Claims 1-3 and 7-12 recite the limitations "the first porous ceramic material" (claim 1, line 8); "the porous ceramic material" (claims 2-3 and 10, line 2); "the porous first ceramic material" (claims 7-8, line 2); "the ceramic material" (claims 9 and 11-12); "the first ceramic material" (claim 12, lines 1-2). It is immediately unclear to the examiner whether all of the foregoing limitations refer to the same "porous first ceramic material" (claim 1). There is

insufficient antecedent basis for this limitation in the claim. Applicant is required to be consistent and use the same terminology in ALL claims to avoid potential confusion and/or ambiguity.

7. Claim 1 recites the limitation "the perforations" (claim 1, line 3). There is insufficient antecedent basis for this limitation in the claim.

8. Claim 1 recites the limitation "the use life" (claim 1, line 9). There is insufficient antecedent basis for this limitation in the claim. Additionally, it is uncertain what is meant by "the use life". Of what?

9. The term "suitable" in claim 1 (line 6) is a relative term which renders the claim indefinite. The term "suitable" is not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. The extent or degree of "suitable" is unknown and undefined.

10. Claim 6 recites the limitation "an electrolyte" in line 1. There is insufficient antecedent basis for this limitation in the claim. There is an earlier recitation of an ion-conductive electrolyte in claim 1. Is applicant intending to recite the same electrolyte?

11. Claim 12 recites the limitation "the pore structure" in line 3. There is insufficient antecedent basis for this limitation in the claim.

12. The terms "a large average particle size" in claim 12 (lines 2-3) and "a smaller average primary particle size" in claim 12 (line 4) are relative terms which renders the claim indefinite. The terms "larger" and "smaller" are not defined by the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be

reasonably apprised of the scope of the invention. The extent or degree of “larger” and “smaller” is unknown and undefined.

13. Claim 12 recites the limitation “the large particles” in line 4. There is insufficient antecedent basis for this limitation in the claim.

14. Claim 12 is rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential elements, such omission amounting to a gap between the elements. See MPEP § 2172.01. The omitted elements are: the recitation “a large average particle size” and “a smaller average primary particle size” appears to make reference to two different and unrelated particle or particle sizes i.e. “the average particle size” and “the average primary particle size”. As best understood, there should not be any relationship between those two types of particles, right?

15. Claim 12 recites the limitation “the solidification” in line 5. There is insufficient antecedent basis for this limitation in the claim.

16. Claims 14-16 recite the limitations “the perforate support ” (claim 14); “the support” (claims 15-16). It is immediately unclear to the examiner whether all of the foregoing limitations refer to the same “flexible perforate support” (claim 1). There is insufficient antecedent basis for this limitation in the claim. Applicant is required to be consistent and use the same terminology in ALL claims to avoid potential confusion and/or ambiguity.

17. Claims 2-4 recite the limitations “the material of the fine particles” (claims 2-3); “the fine particles” (claim 4). It is immediately unclear to the examiner whether all of the foregoing limitations refer to the same “fine particles of a further material” (claim 1). There is insufficient antecedent basis for this limitation in the claim. Applicant is required to be consistent and use the same terminology in ALL claims to avoid potential confusion and/or ambiguity.

### ***Double Patenting***

18. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

19. Claims 1-19 are provisionally rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1-18 of copending Application No.

10/536270. Although the conflicting claims are not identical, they are not patentably distinct from each other because of the following reasons:

Copending application 270 claims the following subject matter (CLAIMS 1-18):

1. A separator for an electrochemical cell, comprising (A) a flexible perforate support, and (B) a porous ceramic material which fills the perforations in the support and is suitable for receiving an ion-conducting electrolyte, characterized in that the porous ceramic material comprises a first porous layer which is characterized by an average pore size and also at least one second porous layer for contacting with an electrode, the second porous layer having an average pore size which is 15 smaller than the average pore size of the first porous layer.
2. The separator of claim 1, characterized in that the porous ceramic material comprises on that side 20 of the first porous layer which is opposite the side of the second porous layer a third porous layer for contacting an electrode of opposite polarity, the third layer having an average pore size which is less than the average pore size of 25 the first layer.
3. The separator of claim 1, characterized in that the average pore size of the second and/or optionally the third layer is in the range from 30 0.1 to 50% of the average pore size of the first layer.
4. The separator of any preceding claim, characterized in that the average pore size of the first 35 layer is in the range from 80 to 1 000 nm and especially in the range from 450 to 800 nm.



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5. The separator of any preceding claim, characterized in that the average pore size of the second layer and optionally of the third layer is in the range from 5 to 250 nm and especially in the range from 25 to 150 nm.
6. The separator of any preceding claim, characterized in that between the first and second layers and/or optionally between the first and third layers there is or are disposed one or more inter-layers whose average pore sizes are each less than the average pore size of the adjacent layer which is in the direction of the first layer and greater than the average pore size of the layer which is in the direction of the electrode assigned this side.
7. The separator of any preceding claim, wherein the porous ceramic material comprises an oxide of zirconium, silicon and/or preferably aluminum.
8. The separator of any preceding claim, wherein the ceramic material is producible by solidifying a slip which contains particles having a large average particle size which determine the pore structure of the ceramic material and also particles having a smaller average primary particle size which adhere the large particles together in the course of the solidification of the slip.
9. The separator of claim 8, wherein the surface of the particles which form the layers additionally comprise SiO<sub>2</sub>, Al<sub>2</sub>O<sub>3</sub>, ZrO<sub>2</sub> or SiC.
10. The separator of any preceding claim, wherein the layers comprise Li<sub>2</sub>CO<sub>3</sub>, Li<sub>3</sub>N, LiAlO<sub>3</sub>, or Li<sub>x</sub>Al<sub>y</sub>Ti<sub>z</sub>(PO<sub>4</sub>)<sub>3</sub> where  $1 \leq x \leq 2$ ,  $0 \leq y \leq 2$  and  $1 \leq z \leq 2$ .
11. The separator of any preceding claim, comprising an electrolyte for ion conductance.
12. The separator of any preceding claim, having a 5 porosity of 15 to 80% and preferably of 20% to 45%.
13. The separator of any preceding claim, wherein the perforate support comprises polymeric fibers, preferably selected from fibers of polyamide, polyacrylonitrile, polyester and/or polyolefin, glass fibers or ceramic fibers.
14. The separator of any preceding claim, wherein the 15 support comprises fibers and/or filaments from 1 to 150  $\mu$ m and preferably from 1 to 20  $\mu$ m in diameter and/or yarn from 3 to 150  $\mu$ m and preferably from 10 to 70  $\mu$ m in diameter.
5. The separator of any preceding claim, wherein the support is non-woven having a pore size from 5 to 500  $\mu$ m and preferably from 10 to 200  $\mu$ m.
16. The separator of any preceding claim that is stable under service conditions at not less than 100°C, preferably at not less than 150°C and most preferably at not less than 180°C.
17. The separator of any preceding claim from 10 to 1000  $\mu$ m, preferably from 10 to 100  $\mu$ m and most preferably from 10 to 50  $\mu$ m in thickness.
18. The separator of any preceding claim that tolerates a bending radius down to 100 mm, preferably down to 20 mm and most preferably down to 1 mm.

In this case, the subject matter of the copending application'270 appears to fully encompass and read on the subject matter of the present application.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

***Claim Rejections - 35 USC § 102***

20. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless --

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

21. Claims 1-4 and 6-19 are rejected under 35 U.S.C. 102(b) as being anticipated by Penth et al 2002/0023874.

As to claim 1:

Penth et al disclose a permeable composite material (Abstract) useful as a separating membrane or in applications related to filtration or membrane technology (Abstract/P0063) comprising a porous permeable support which is flexible (Abstract/P0010-0012/0057/CLAIM 1) which is coated with a porous ceramic material and fine particles of another material (P0016, 0021, 0027, 0037, 0051-0052, 0054). **EXAMPLES 1.1-1.19, 2.1-2.8 and 3.1-3.3** exemplify embodiments comprising a porous substrate/support being coated with plural components. It has been disclosed that the permeable composite/carrier (or support) is permeable for substance with a particle size of between 0.5 nm to 500  $\mu\text{m}$  (P0014, 0018); between 0.5 nm to 10  $\mu\text{m}$  (P0023). Penth et al discuss the gap sizes (relationship between the porosity of the disclosed materials) (P0024); and in particular, two particle size fractions and particle size proportions or ratios of between 1:1 and 1:10000, preferably between 1:1 and 1:100, and preferably between 1:1 and 1:0.1 (**P0029-0030, 0043, 0056**) where the smaller particle size should not exceed a proportion of 50 % at mist, preferable 20 % and especially preferably 10 % (**P0056**). Penth et al also discuss

a pore gradient (P0055). It is disclosed that the coating material is applied onto or into the perforated support (P0037).

As to claims 2-3:

Penth et al disclose the use of ceramic or inorganic layers applied to the support/carrier (P0051) where the same or different materials can be used, alone or in combination (P0051-0052, **0028**, 0053)

As to claims 4 and 11:

Penth et al use for coating/layer purposes, alone or in combination, the following materials:  $\text{Al}_2\text{O}_3$ ,  $\text{SiO}_2$ ,  $\text{ZrO}_2$  and/or  $\text{SiC}$  (P0028, 0043 & 0052); oxides of Al and/or Zr can be specifically used (P0052).

As to claim 6:

The permeable composite material of Penth et al is comprised of multiple materials, thereby any one of those materials can exhibit electrolytic behavior(Abstract).

As to claims 7-9:

Penth et al discuss a layer material including a powder having a particle size of between 1 and 1000 nm (1 nm and 1  $\mu\text{m}$ ) (P0054). It is also disclosed that a compound with a particle size of 5  $\mu\text{m}$  can be applied to the carrier/support (P0055). A coating of a porous ceramic material and fine particles of another material is applied on the support (P0016, 0021, 0027, 0037, 0051-0052, 0054). **EXAMPLES 1.1-1.19, 2.1-2.8 and 3.1-3.3** exemplify embodiments comprising a porous substrate/support being coated with plural components. It is disclosed that the coating material is applied onto or into the perforated support (P0037).

As to claim 10:

Penth et al discuss the gap sizes (relationship between the porosity of the disclosed materials) (P0024); and in particular, two particle size fractions and particle size proportions or ratios of between 1:1 and 1:10000, preferably between 1:1 and 1:100, and preferably between 1:1 and 1:0.1 (**P0030, 0043, 0056**) where the smaller particle size should not exceed a proportion of 50 % at mist, preferable 20 % and especially preferably 10 % (**P0056**). Penth et al also discuss a pore gradient (P0055).

As to claim 12:

As to the method limitation, (*i.e. produced by solidifying a slip or in the course of the solidification step*), it is noted that a method limitation incorporated into a product claim does not patentably distinguish the product because what is given patentable consideration is the product itself and not the manner in which the product was made. Therefore, the patentability of a product is independent of how it was made. As a result, the process steps of a product-by-process claim do not impart any significant property or structure to the claimed end product. And, if there is any difference, the difference would have been minor and obvious.

Determination of patentability of a product-by-process claim is based on the scope of the product itself. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product by process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." In re Thorpe 777 F.2d 695, 698, 227 USPQ 964,966 (Fed Cir. 1985) and MPEP 2113.

As to claim 13-16:

The porous carrier/support of Penth et al can be made of glass, ceramic and or natural fibers and/or plastic materials or ceramically bound fibers (P0024) including glass, metal and polymer fibers (P0025) with preferably mesh size (correlated to a diameter) of between 70-120  $\mu\text{m}$  (P0025). An expanded metal with a pore size of 3-60  $\mu\text{m}$  can be used as the carrier/support (P0026).

As to claim 17:

Since the separator of Penth et al is made of substantially the same materials as the one claimed by the applicant (i.e. flexible porous support coated with a ceramic layer and fine particles deposited therein and including specific porosity characteristic, it is contended that products of identical chemical composition can not have mutually exclusive properties, and thus, the claimed property (i.e. *being stable under conditions at not less than 100 °C*), is necessarily present in the prior art material. "Products of identical chemical composition can not have mutually exclusive properties." A chemical composition and its properties are inseparable. Therefore, if the prior art teaches the identical chemical structure, the properties applicant discloses and/or claims are necessarily present. In re Spada, 911 F.2d 705, 709, 15 USPQ2d 1655, 1658 (Fed. Cir. 1990). ***See MPEP 2112.01 [R-3] Composition, Product, and Apparatus***

***Claims***

As to claim 18:

The layer thickness of Penth et al's separator is 10  $\mu\text{m}$  (P0091). *Thus, Penth et al cover the claimed thickness.*

As to claim 19:

The permeable composite of Penth et al can be bent to a radius of up to 100 mm (P0016, 0019).

Thus, the present claims are anticipated.

22. *(at least)* Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by the German publication DE 10115928 (herein called the DE'928).

As to claims 1-4:

The DE'928 discloses a proton conducting electrolyte membrane (*taken to represent a separator*) comprising a porous substrate containing glass fibers or filaments coated with a ceramic material such as SiO<sub>2</sub> and Al<sub>2</sub>O<sub>3</sub> and a material comprising particles (P0018-0025, 0038-0041, 0046, 0059/CLAIMS 1, 8-15 and Examples 1.9, 2.1 and 2). The relationship between the porous materials is disclosed in P0026-0028, in particular, there is disclosed fine particles of a material incorporated into the porous substrate/ceramic material wherein the porosity thereof is 20-50% of the average pore size of the porous substrate/ceramic material (P0026-0028). Porosity ratios are disclosed (P0044-0046). *The electrolyte material is the ceramic material itself*

Thus, the present claims are anticipated.

***Claim Rejections - 35 USC § 103***

23. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

24. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

25. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

26. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Penth et al 2002/0023874 as applied to claim 2 above, and further in view of Visco et al 2004/0126653.

Penth et al is applied, argued and incorporated herein for the reasons discussed above. However, the preceding reference does not disclose the specific fine particles of claim 5.

Visco et al disclose the formation of a  $\text{Li}_3\text{N}$  layer, among other materials, on the surface of a glass-ceramic material which is used as a protective composite separator in a electrochemical device (P0065/CLAIMS 1, 19 and 25/Abstract).

In view of the above, it would have been within the purview of a skilled artisan at the time the invention was made to form the  $\text{Li}_3\text{N}$  layer of Visco et al on the surface of the ceramic

material of Penth et al as Visco et al teach that such a layer and material produces a composite separating material usable in batteries that has the desired properties of high overall ionic conductivity and chemical stability towards the anode, the cathode and ambient conditions encountered in battery manufacturing. As such, the composite separating material is capable of protecting an active anode material from deleterious reaction with other battery components or ambient conditions while providing a high level of ionic conductivity to facilitate manufacture and/or enhance performance of a battery in which the composite material is incorporated.

27. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Penth et al 2002/0023874 as applied to claim 2 above, and further in view of Michot et al 2008/0213661.

Penth et al is applied, argued and incorporated herein for the reasons discussed above. However, the preceding reference does not disclose the specific fine particles of claim 5.

Michot et al conceptualize using a dispersion of solids in the forms of powders (e.g. particles) including  $\text{LiAlO}_2$  and/or ceramic fibers in form of a layer as an additive to a solid electrolyte (P0042). Lithium nitride are also suitable for this purpose (P0042). The addition of these additives enhance properties of the solid electrolyte and confer improved mechanical characteristics to the finished product (P0042). Michot et al suggest forming a thin film of the solid electrolyte (*the separator*) with the additive (Abstract). Michot et al discuss electrolyte for batteries (P0007). *In this case, the solid electrolyte is taken to represent a separator or separating member in the battery as it separates the anode from the cathode.*

In view of the above, it would have been within the purview of a skilled artisan at the time the invention was made to use the  $\text{LiAlO}_2$  and/or lithium nitride of Michot et al on the



surface of the ceramic material of Penth et al as Michot et al teach that such a material can be used as an additive to solid electrolytes for enhancing their properties and improving mechanical characteristics to the finished product.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Raymond Alejandro whose telephone number is (571) 272-1282. The examiner can normally be reached on Monday-Thursday (8:00 am - 6:30 pm).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Patrick J. Ryan can be reached on (571) 272-1292. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Raymond Alejandro/  
Primary Examiner, Art Unit 1795

